

Amendments to the Claims:

1.-30. *(Canceled)*

31. *(Currently amended)* A method for guiding the a cognitive ~~processes~~ task of a subject comprising:

measuring activity of one or more internal ~~voxels~~ localized regions of a brain of said subject, wherein said measuring is performed by an apparatus comprising an fMRI; ~~and~~
employing a computer executable logic that takes said measured activity and communicates information based on said measured activity to said subject who is still within said fMRI apparatus ~~based on said measured activity in less than 10 seconds from when said measured activity is measured; [[,]]~~ and,

~~guiding wherein said information guides the a cognitive~~ task ~~processes~~ of said subject using said information ~~instructions~~.

32. *(Currently amended)* The method according to claim 31 wherein said activity measurements are made from ~~at least 100 internal voxels~~ a plurality of localized regions of said brain.

33. *(Currently amended)* The method according to claim 31 wherein said measuring brain activity comprises scanning the entire brain.

34.-36. *(Canceled)*

37. *(Currently amended)* The method according to claim 31 wherein a spatial activity pattern is measured from said one or more internal ~~voxel~~ localized regions ~~comprise a region of interest~~.

38. *(Canceled)*

39. ***(Currently amended)*** The method according to claim 37 wherein said ~~region of~~ interest one or more internal localized regions has a primary function of releasing a neuromodulatory substance selected from the group consisting of: dopamine, acetyl choline, noradrenaline, serotonin, and endogenous opioids.

40. ***(Currently amended)*** The method according to claim 31 wherein said subject is identified as having one or more conditions selected from the group consisting of: Parkinson's disease, Alzheimer's disease, attention deficit disorder, depression, substance abuse and addiction, brain injury, stroke, and schizophrenia.

41. ***(Previously presented)*** The method according to claim 31 wherein said information is communicated in a manner selected from the group consisting: of providing audio to the subject, providing tactile stimuli to the subject, providing a smell to the subject, and displaying an image to the subject.

42. ***(Previously presented)*** The method according to claim 31 wherein said information communicated is an instruction.

43. ***(Previously presented)*** The method according to claim 42 wherein said instruction comprises a text or an iconic indication denoting an action to be performed by said subject.

44. ***(Currently amended)*** The method according to claim 42 wherein said instruction identifies a mental task to be performed by said subject.

45. ***(Previously presented)*** The method according to claim 42 wherein said instruction is selected from a set of instructions stored in memory.

46. ***(Canceled)***

47. ***(Currently amended)*** The method according to claim 31 wherein said information is communicated to said subject comprises in the form of a graph or indicator of the

level of activation of said one or more internal ~~voxels~~ localized regions to guide said subject to increase or decrease level of activation of said one or more internal ~~voxels~~ localized regions through their cognitive processes.

48.-54. *(Canceled)*

55. *(New)* The method of claim 31 wherein said information is communicated when said measured activity of one or more internal localized regions of a brain is greater than a preselected threshold level.

56. *(New)* The method of claim 55 wherein said subject is trained to increase said measured activity to be greater than said preselected threshold level.

57. *(New)* The method of claim 31 wherein said cognitive task comprises forming an estimate of said measured activity.

58. *(New)* The method of claim 31 wherein said cognitive task comprises listening to, comprehending, producing or imagining speech.

59. *(New)* The method of claim 31 wherein said cognitive task comprises physical exercise of body extremities.

60. *(New)* The method of claim 31 wherein said cognitive task comprises improving memory.

61. *(New)* The method of claim 31 wherein a computer interface is provided that allows said subject to input information.

62. *(New)* The method of claim 31 wherein said one or more internal localized regions comprise regions associated with neuronal plasticity and learning.

63. *(New)* The method of claim 31 wherein said subject further communicates with an operator by audio and/or video communication.

64. *(New)* The method of claim 31 wherein measuring said fMRI activity further comprises collecting volume data; and pre-processing the volume data by at least one step from the group consisting of: spatial smoothing, temporal filtering, slice time correction, transformation into standard coordinates, resampling of data, motion correction of data, and regression filtering.

65. *(New)* The method of claim 31 wherein said fMRI measurements are spatially registered to measurements made on different days.

66. *(New)* The method of claim 31 further comprising repeating the method across multiple training sessions.

67. *(New)* The method of claim 31 wherein said communicating said information is performed in substantially real time relative to said measuring step.

68. *(New)* The method of claim 31 wherein said fMRI activity measurements include a spatial pattern comparison metric that compares a spatial pattern of activity in said at least one localized region with a target or reference spatial pattern.

69. *(New)* The method of claim 31 wherein said information is an activity metric computed from one or more regions of interest of the brain.

70. *(New)* The method of claim 31 wherein said information is an activity metric comprising the average signal computed from one or more regions of interest of the brain.

71. *(New)* The method of claim 31 wherein said information is an activity metric comprising the average value from a region of interest at a single time point.

72. *(New)* The method of claim 31 wherein said information is a comparison metric which is the difference between an activity metric for a recent period of time and the same activity metric computed for a reference period of time, such as an earlier period of time.

73. *(New)* The method of claim **31** wherein said information is a chart of the timecourse of activity in a region of interest.